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DEPARTMENT OF GENETICS
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Sir MacFarlane Burnet
Hall Institute of Medical Research
Royal Melbourne Hospital
Parkville, N.2., Victoria, Australia

Dear Mac:

I have a vague feeling that we have been through some of this before but I can find no record of it in my correspondence and my recollection is rather dim so I will trouble you with a specific question.

This has to do with the possible biological function of the homograft mechanism. The circumstances where homograft rejection, or at least the phenomenon, could play a role in natural history would seem to be (1) pregnancy (2) the spread of tumor cells (which might well be contagious except for homograft rejection) (3) reactions against cross-reacting bacterial antigens. But there is one other circumstance where tissue antigens may well be carried from one individual to another which I do not think has been extensively discussed: these are the antigens which are associated with infective virus particles.

I'm not sure of the status of recent opinion on the localization of such host tissue antigens in virus particles - whether, what would seem to me entirely plausible, they are actually incorporated bodily in the virus coats or whether they are still considered to be adventitious and extraneous contamination. If the former is correct it should be true that there is a persistent albeit it microscopic, inoculation of tissue antigens from individual to individual in company with the usual circumstances of virus infection. I am thinking here particularly of the influenza virus as I have no immediate recollection of similar studies with other viruses. The question I would like to ask you is whether there is any evidence that there is antiviral, protective effect of the establishment of immunity against the associated tissue antigens. For example, mice might be immunized against chick egg antigens and then examined to see whether this procedure has any effect on the infectivity of influenza virus grown on chick eggs as compared to other tissue sources. Perhaps even more impressive would be a comparison of virus infectivity as between mice of the same strain and of different strains, particularly when the latter were immunized one against the other.

Do you know of any work along these lines or that would bear on this question? What is your reaction to the general proposition?

It was good fun to see you and Linda in the spring and we hope you had a profitable and happy trip.

As ever,

Joshua Lederberg